T10D06 – 10.3 IB Practice MS

1. (i) butane;

$C_4H_{10}(g) + \frac{13}{2} O_2(g) \rightarrow 4CO_2(g) + 5H_2O(l)$;

(ignore state symbols, accept balancing using $13O_2$)

***[1]** for all formulas and **[1]** for balancing equation.*

CO produced;

CO is poisonous/combines with hemoglobin/*OWTTE*;

or

C;

which causes respiratory problems; 5

(ii) add Br_2 (water);

valid test needed to score further marks.

A – no effect;

B – would decolorise Br_2 (*do not accept discolour*); 3

(iii) $CH_3CH{=}{=}CHCH_3 + HBr \rightarrow CH_3CHBrCH_2CH_3$; 3

***[1]** for HBr in balanced equation, **[1]** for structure of product.*

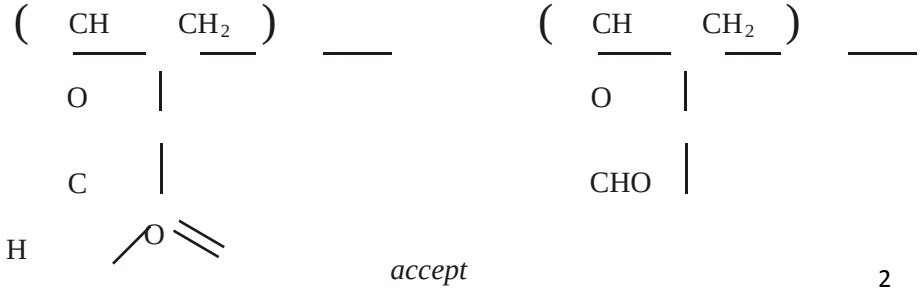
addition;

[11]

2. (i) II reacts with Br_2

II is an alkene/has unsaturated R group/C═C present, I contains only saturated R groups; 2

(ii) addition polymerization;



accept 2

[4]

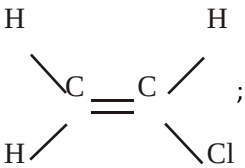
3. (i) C_4H_{10} : non-polar, only van der Waals' forces that cannot replace/ interact with H–bonding in water;

C_2H_5Cl : only slightly polar/not capable of H–bonding with water; 2

(ii) $(CH_3)_2CO$: highly polar/forms H–bonding with water;

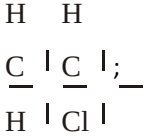
C_3H_7OH : forms H–bonding with water (as H is bonded to O); 2

[4]

4. (i) $CH_2CHCl/CH_2 = CHCl/$  ; 1

(ii) addition (polymerization);

(carbon-carbon) double bond/unsaturation/*OWTTE*; 2

(iii)  ; 1

(iv) monomers have smaller molecules/surface area than polymers;

with weaker intermolecular/Van der Waals' forces; 2

Accept opposite argument for polymers.

[6]